Classification: Utilities Engineer	**Position No.** 3200-3518-001
CBID: R09	**Office:** Energy Generation Research
Date Prepared: January 2019	**Division:** Energy Research and Development
KEY: (E) IS ESSENTIAL, (M) IS MARGINAL	

Under the general supervision of the Electric Generation System Specialist III and the Technical Lead of the Environmental Program Area in the Energy Generation Research Office, the incumbent performs mechanical, electrical, and civil engineering work in the design, construction, operation and maintenance of the electricity system or natural gas system while considering climate change and other environmental impacts. Conducts investigations and prepares reports involving engineering economic work, which includes studies of capital costs, financial structure, depreciation, physical plant inspections, valuations, revenues, and expenses. Conducts technical analyses and provides direction in the development of research engineering projects funded by the Energy Commission (Commission) on energy related environmental areas, including climate change. Contributes engineering skills when reviewing and/or preparing engineering and environmental studies or evaluations and assists the management with program planning and implementation of projects addressing energy policy.

The goal of the Energy Research and Development Division is to conduct research, development, and demonstration to advance science and technologies not adequately provided by the regulated and competitive markets. Energy related climate change research requires a broad expertise on power generation, the electric grid, and the energy system in general. For this reason, the incumbent is knowledgeable of multiple aspects of engineering such as energy/mass balances, thermodynamics, fluid mechanics, combustion, strength/properties of materials, statistical analyses, testing of equipment, and interpretation of technical codes and standards.

WORKING CONDITIONS: The work involves sitting, standing, and walking and is performed in an indoor office and meeting room setting and alternatively on-site or in-field at project sites. The candidate must work well with people inside and outside the Commission, including policy-makers and members of the general public. Travel is required to attend site inspections, workshops, hearings and meetings. Additional hours beyond an eight-hour workday or forty-hour workweek may be required. While performing the duties described below, the incumbent will be required to work alone and/or in a team environment, using a personal computer and appropriate Commission software such as word processing, scientific/engineering programs, electronic mail, and Internet and participate in and lead meetings with other staff and with other agencies. The incumbent may be also required to use software tools to perform engineering analyses.

DUTIES AND RESPONSIBILITIES:

40% Provide engineering analysis and technical support including planning and organizing engineering projects on climate change and other energy related environmental topics. Serve as the technical lead over other engineering and technical personnel on complex engineering projects to support energy-related environmental research, including adaptation of the energy system to climate change. The projects for which the incumbent is responsible involve technical engineering issues relating to the energy system including components of the natural gas and

electricity systems. In addition, the incumbent has technical expertise in the engineering aspects of power electronics, transmission and distribution equipment and power flow, energy efficiency, heating and air conditioning (HVAC), furnaces, steam boilers, engines, gas turbines, combined heat and power, conversion technologies and processes, and other technologies, components, and systems. Lead analysis of assessments of key engineering issues affecting the energy sector, including evaluations and analysis of energy/environmental trends and drivers, technological responses, identification of engineering problems, possible engineering solutions, and recommendations for research initiatives sponsored by the Commission. Participate in technical scoring committees and provides his/her engineering expertise in reviewing proposals and provides recommendations for project funding. Direct research project design/scope, task descriptions, review and approve test plans and protocols, and review the content of final products. Subjects typically requiring engineering analysis include, but are not limited to, the following research areas:

- Assist in the management of large multiyear projects involving the development of regional climate models and climate projections designed to estimate how climate change would affect the energy system. This work requires expertise on fluid mechanics, numerical methods, energy balances, and other engineering disciplines. (E)
- Assist in the study of engineering issues relating to the potential effects of climate change on the energy system and the development of engineering adaptation/coping strategies. For example, the effect of high temperatures on the thermal and mechanical performance of power plants, cooling systems, transmission lines, transformers, and the performance of end use energy devices. (E)
- Assist in the management of large–scale field studies on engineering aspects affecting the technical performance or environmental characteristic of different parts of the energy system on topics related to climate change. For example, the incumbent may be involved with studies on the interaction between the electricity system and wildfires in California or analysis of the environmental impacts resulting from electrification of services. (E)
- Assist with the management of engineering projects involving the evaluation of options to reduce net greenhouse emissions from the electricity and natural gas system. (E)

30% Conduct engineering research projects including evaluating performance, providing quality control/assurance, reviewing interim research products (e.g. results of surveys, test results, design drawings, etc.); evaluating technical changes to project budget/scope, and reviewing/approving final products from completed projects. (E)

15% Engage public and private entities through reports, fact sheets, correspondence, and other documents addressing energy related climate change and other environmental research and related issues important to the Commission. This function requires the incumbent to effectively communicate research to other engineers, researchers, and the public at large, requiring both a good degree of technical knowledge and expertise and sensitivity to policy issues. In addition to technical proficiency, this liaison responsibility may include assisting with interactions and detailed negotiations with other projects or programs both internally and externally, including national organizations such as the US Department of Energy (DOE), the California Public Utilities Commission (CPUC), US Environmental Protection Agency (EPA), American Gas Association, the US Global Change Research Program, Air Resources Board (ARB), and Air Districts and Investor Owned Utilities (IOUs). (E)

10% Direct and perform engineering assessments, and provide technical advice and expert testimony relating to climate change effect on mechanical systems including: power electronics, transmission and distribution equipment and power flow, HVAC, furnaces, steam boilers, engines, gas turbines and other energy technologies for senior and executive managers, Commissioners and decision-makers and in the preparation of key policy documents such as the Integrated Energy Policy Report. Testify in formal proceedings and before public interest groups, regulated industries, and various governmental agencies as well as the Legislature. (E)

5% Other duties as required consistent with the classification. (M)

SIGNATURES	
I Certify That I Am Able To Perform, With Or Without The Assistance Of A Reasonable Accommodation, The Essential Job Duties Of This Position	
Incumbent Date Utilities Engineer	Angela Gould Date Electric Generation System Specialist III